

## PATENT COOPERATION TREATY

## PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT  
(PCT Article 36 and Rule 70)



Applicant's or agent's file reference P016010WONAR	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/GB 03/04313	International filing date (day/month/year) 06.10.2003	Priority date (day/month/year) 12.12.2002
International Patent Classification (IPC) or both national classification and IPC G06F1/00, G06F9/00		
Applicant ARM LIMITED		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 6 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand  15.06.2004	Date of completion of this report  07.01.2005
Name and mailing address of the international preliminary examining authority:   European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer  Alecu, M  Telephone No. +31 70 340-2648  

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International application No. **PCT/GB 03/04313**

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*):

**Description, Pages**

2-15 as originally filed  
1, 1a received on 13.10.2004 with letter of 12.10.2004

**Claims, Numbers**

1-26 received on 13.10.2004 with letter of 12.10.2004

**Drawings, Sheets**

1/11-11/11 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).  
☐ the language of publication of the international application (under Rule 48.3(b)).  
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority in written form.  
☐ furnished subsequently to this Authority in computer readable form.  
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.  
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1-26
	No: Claims	
Inventive step (IS)	Yes: Claims	1-26
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-26
	No: Claims	

2. Citations and explanations

**see separate sheet**

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement**

Reference is made to the following documents:

D1: SONG S P ET AL: "THE POWER PC 604 RISC MICROPROCESSOR" IEEE MICRO, IEEE INC. NEW YORK, US, vol. 14, no. 5, 1 October 1994 (1994-10-01), pages 8-17, ISSN: 0272-1732

1. The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and shows (the references in parentheses applying to this document):

An apparatus for processing data under control of data processing instructions specifying data processing operations (PowerPC 604 RISC Microprocessor), said apparatus comprising:

- a first execution mechanism operable to execute a first set of data processing instructions (D1, Figure 4, Integer unit 1);
- a second execution mechanism operable to execute a second set of data processing instructions (D1, Figure 4, Integer unit 2), said first set of data processing instructions overlapping with said second set of data processing instructions such that one or more data processing instructions are executable by either said first execution mechanism or said second execution mechanism (the same set of instructions - simple arithmetical operations - are executable by both units); and
- an execution mechanism selector operable to pseudo randomly select either said first execution mechanism or said second execution mechanism to execute one or more data processing instructions that are executable by either said first execution mechanism or said second execution mechanism (the execution mechanism selector is the "Dispatch" block from Figure 3, described in D1, page 11, left-hand column, paragraph "Instruction decode and dispatch". The selection of the first or second execution mechanism is based on the resource availability, which is a pseudo random event because it depends on a large number of unpredictable events, such as asynchronous interrupts and user actions).

The subject-matter of claim 1 differs from that known from D1 in that, according to claim 1, the execution mechanism selector is controlled by a pseudo random execution mechanism selecting signal generated by a pseudo random signal generator, whereas, in D1 the

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execution mechanism selector selects the execution mechanism based on the data flow and the availability of the resources needed to complete the execution (page 12, left hand column, second paragraph).

The subject-matter of **claim 1** is therefore new (**Article 33(2) PCT**).

The problem to be solved by the present invention may be regarded as how to mask the power signature of the data processing activity .

The solution to this problem proposed in **claim 1** of the present application is considered to involve an **inventive step (Article 33(3) PCT)** for the following reasons:

The person skilled in the art, starting from D1 and trying to mask the power signature of the data processing activity would consider adding circuitry that consumes a random amount of power during sensitive data processing.

The person skilled in the art would not consider selecting pseudo randomly the execution mechanism since that carries a performance penalty.

2. The above reasoning also applies, mutatis mutandis to the corresponding method claim 14, which is therefore also **new (Article 33(2) PCT)** and **inventive (Article 33(3) PCT)**.

3. Claims 2-13 and 15-26 are dependent on claims 1 or 14 and as such also meet the requirements of the PCT with respect to novelty (**Article 33(2) PCT**) and inventive step (**Article 33(3) PCT**).